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CONTENTS

Froeschner—Review of the genus Katakadia 249

Bellinger—Adaptive coloration in Collembola 254

Muesebeck—New reared species of Rogas 257

Raff—Two species of Odonata from Pennsylvania 262

Hays—Silvius atitlanensis sp. nov. and other Tabanidae 263

DeLeon—An undescribed Phytoseius from Florida and Mexico 269

Chant—An unusual instance of phoresy in Acarina 270

Indexes and title page to Volume LXXI 273

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FIG. 1. *Katakadia caliginosus* (Walker) general habitus, dorsal view. E. H. Froeschner, *del.*

ENTOMOLOGICAL NEWS

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Review of the Genus Katakadia Distant (Hemiptera: Cydnidae)*

By RICHARD C. FROESCHNER, Montana State College, Bozeman, Montana, U. S. A.

Distant proposed *Katakadia* for *Aethus caliginosus* Walker from Malaya and reported a second specimen from the same country.

In the present paper the genus is redefined in the light of recent evaluations of structural characters and a third specimen, the first male (the allotype), is reported.

The tarsal development, marginal and submarginal setigerous punctures of head, thorax and abdomen and the trichobothrial arrangement easily place *Katakadia* in the subfamily Cydninae as limited in my study of the species of the family for the Western Hemisphere (Froeschner, in press, in Proc. United States Nat. Mus.).

Genus KATAKADIA Distant

1899 *Katakadia* Distant, Ann. Mag. Nat. Hist., 4: 220.

DIAGNOSIS: The unusual shape of the head (postocular part prolonged into a converging "neck" which is about one-sixth

* Contribution from Montana State College, Agricultural Experiment Station, M. S. 38, paper 499, Journal Series.

National Science Foundation Grant No. G7118 made it possible for the author to visit European Museums containing collections critical to this and other studies on the genera and species of the family Cydnidae. The material on which this paper is based belongs to the British Museum of Natural History; and it is with sincere thanks that I gratefully acknowledge the help of Dr. China and his staff who made my study period at that institution a most pleasant and profitable one.

longer than that of the preocular part) and the placement of the ocelli sublaterally and postmedially on the neck (separated from the eye by a space about two-thirds or more of the greatest length of an eye), or the very deep (almost one-third of overall pronotal length), bluntly V-shaped emargination in the anterior margin of the pronotum will separate this genus from any other in the family.

DESCRIPTION: Because there is only one species known for this genus the selection of truly generic features is difficult. However, experience with other genera suggests that the following might have that status: shape oval, sides subparallel.

Head: (figs. 3, 6) anteriorly a flattened semicircle, emarginate apically where juga are broadly contiguous anterior to clypeus; latter with a pair of strongly anteapical setigerous punctures; postocular part of head prolonged into a converging "neck," postmedially on which are the ocelli; ocellus separated from the eye by a space at least two-thirds as long as an eye; juga with a submarginal row of setigerous punctures, the setae of which are short, thick and blunt near apex of head and longer and more slender laterally; antennae five-segmented; labium reaching midcoxae, segment II compressed but without a semicircular foliaceous lobe.

Pronotum: length about half width; anterior margin very deeply and bluntly V-emarginate (fig. 1); posterior margin broadly and weakly convex, distinctly emarginate laterally. *Scutellum:* slightly longer than wide, abundantly punctate. *Hemelytron:* areas clearly defined; membrane about one-third of hemelytral length. *Propleuron:* prosternal carinae about half as high as labial II, enclosing a broad, deep basin which broadens apically. *Mesopleuron:* (as illustrated, fig. 4) evaporatorium extensive, reaching to deep fovea in postero-lateral angle, leaving the anterior lateral angle polished but coarsely punctate; posterior margin distinctly crenulate. *Metapleuron:* (as illustrated, fig. 4) evaporatorium reaching three-fourths across sclerite, apex nearly straight, oblique; lateral polished area with about eight to ten distinct punctures; osteole opening posteriorly under ledge, basad of a short hook; peritreme dull, weakly con-

vex, ending abruptly and obliquely; anterior to apex of peritreme is a flattened, strongly bilobed or trilobed process shown on fig. 4.

Sternites: visible segments I–IV of male distinctly narrowed medially, their combined midlengths subequal to midlength of V; of female I–III narrowed medially, IV not narrowed but not as long as V; posterior margins laterally with prominent denticulations. *Legs:* anterior tibiae (fig. 5) flattened, with 9–10 strong spines on dorsal margin; hind tibiae (fig. 7) slightly widened and flattened or weakly concave, on unspined anterior face. *Terminalia:* male genital capsule opening dorsally; female genital plates of the usual pentatomoid type.

TYPE OF GENUS: *Aethus caliginosus* Walker, monobasic.

DISTRIBUTION: The type and two other known specimens were collected on the west coast of the Malayan peninsula.

Katakadia caliginosus (Walker) (fig. 1)

1867 *Aethus caliginosus* Walker, Catal. Hemip. Brit. Mus., 1: 161.

1899 *Katakadia caliginosus* Distant, Ann. Mus. Nat. Hist., 4: 220.

DIAGNOSIS: recognized as being the only species within the genus.

DESCRIPTION: (based on one male and two females; measurements given in millimeters). *Male:* oval.

Head: length:width::1.49:1.69; interocular width 1.04; surface strongly longitudinally depressed on either side between eye and base of slightly elevated and partly transversely rugose clypeus; juga and vertex coarsely and mostly contiguously rugopunctate; juga ventrally polished and impunctate; antennal segments I, 0.46: II, 0.29: III, 0.46: IV, 0.59: V, 0.70; labial segments: I, 0.78: II, 0.96: III, 0.84: IV, 0.56; bucculae as high as labial II, enclosing basal half of labial I.

Pronotum: anterior emargination very deep, nearly one-third of pronotal length when measured to apices of antero-lateral angles; length of pronotum along midline:width::2.17:4.35; lateral margins gradually converging from base, more abruptly

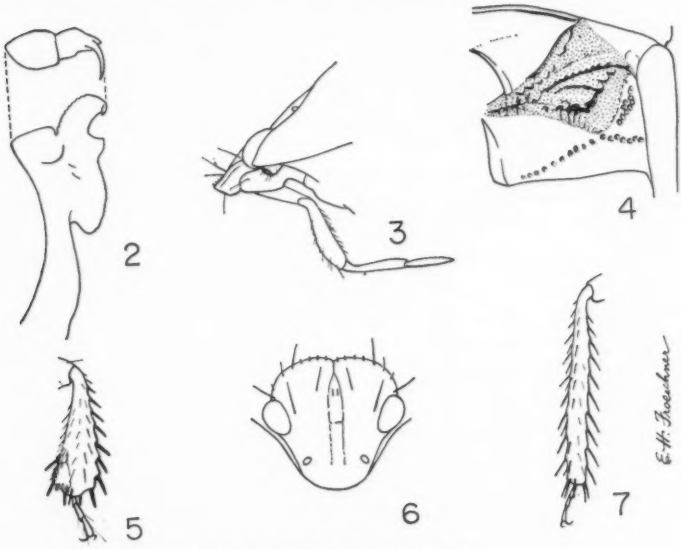
and convexly so in apical third, with a submarginal row of about twelve setigerous punctures; transverse impression obsolete, its lateral ends marked by a broad, shallow, sunken depression; entire surface, except edges of calli, with abundant, very close-set strong punctures, these coarsest at anterior angles and generally becoming finer toward posterior margin. *Scutellum:* length:width::2.85:2.40; surface with abundant, close-set punctures, these finer on apical fourth. *Hemelytron:* costal edge, corium (including "veins") and clavus with crowded, coarse, shallow punctures; costa with 4 setigerous punctures; membranal suture weakly convex, strongly recurved laterally; membrane shining golden brown, slightly longer than wide, reaching to tip of abdomen. *Propleuron:* polished, with a few coarse punctures in depression posterior to coxae and numerous crowded coarse ones on both anterior convexity and acetabulum; prosternal carinae about half as high as labial II. *Mesopleuron* and *Metapleuron:* as illustrated and defined for genus.

Sternites: except for posteriorly-converging polished mid line, with numerous crowded, coarse punctures (similar to those of exocorium). *Terminalia:* genital capsule in posterior view as high as wide, apical margin entire, slightly convex on median third; surface with crowded shallow punctures; gonostylus as illustrated (fig. 2). *Length of Body:* 7.80.

FEMALE: similar to males but measurements a little larger. *Head:* length:width::1.62 (1.56–1.69):1.82 (1.82–1.82); interocular width, 1.10 (1.10–1.10); antennals, I, 0.43 (0.43–0.43): II, 0.30 (0.30–0.30):III, 0.48 (0.46–0.50):IV, 0.60 (XXX–0.60):V, 0.73 (XXX–0.73); labials, I, 0.83 (0.80–0.86):II, 1.12 (1.03–1.22):III, 0.90 (0.90–XXX):IV, 0.60 (0.60–XXX). *Pronotum:* length:width::2.55 (2.55–2.56):4.94 (4.93–4.95). *Scutellum:* length:width::3.26 (3.23–3.30):2.84 (2.84–2.85). *Length of Body:* 8.40 (8.33–8.46).

TYPE DATA: Personal examination of the type female from "Malacca," Malaya in the British Museum of Natural History leaves no room for doubt concerning the identity of this species; the allotype (designated here), the male described in this paper, is also housed in the above institution.

SPECIMENS EXAMINED: Besides the type mentioned above, the author examined two other specimens in the British Museum: the Perak, Malaya, specimen reported by Distant (1899: 220) and one male, allotype, labeled "Malaya, Kuala Lampur, nr. L. Gardens, coll. H. M. Pendlebury, 12–8–1933."



Katakadia caliginosus (Walker).

FIG. 2. Right male gonostylus, mesal view with apical projection.
FIG. 3. Head and labium, lateral view.
FIG. 4. Mesopleuron and metapleuron, ventral view.
FIG. 5. Anterior tibia and tarsus, anterior view.
FIG. 6. Head, dorsal view.
FIG. 7. Posterior tibia and tarsus, posterior view.

DISCUSSION: From the above it is evident that this species is known only from the western coastal states of the Malaya Federation.

For a species as large as this one, it is surprising that only two specimens have been reported in the more than ninety years since it was first made known to science. Perhaps its habits are such that it seldom ventures into the sight of man.

Walker's original description is misleading in the statement "Thorax with a well-defined transverse furrow which is somewhat nearer to the hind border than to the fore border." Examination of the type gave no clue as the transverse furrow is mostly virtually absent; perhaps parts of two descriptions were confused there.

Possible Adaptive Coloration in Poduroid Collembola [1]

By PETER F. BELLINGER, Biology Department,
San Fernando Valley State College

There is considerable evidence that Collembola of the superfamily Poduroidea are distasteful. Not all predators are repelled by them; for instance, Schaller (1949) found the beetle *Notiophilus biguttatus* feeding on *Hypogastrura bengtssoni*. However, several animals which regularly eat Collembola have been seen to reject members of this group. The most detailed reports are those of Lipovsky (1951), who observed that trombiculid mites would eat Entomobryidae but not poduroids, and Wilson (1950) on the dacetine ant *Strumigenys louisianae*, which ate a variety of isotomid and entomobryid Collembola but refused *Neanura muscorum* and *Hypogastrura* sp.

I have found no records of predation on, or avoidance of, members of the Pseudachorutinae, but it is very likely that they are also distasteful. The larger members of the subfamily react to irritation or injury by "reflex bleeding," releasing hemolymph through weak points in the cuticle. The same phenomenon is known in onychiurid Collembola, which have special openings (pseudocelli) through which hemolymph escapes. Dacetine ants also refuse onychiurids (Brown, 1950). Reflex bleeding appears to be a defense mechanism; almost all the

[1] The collections on which this note is based were made with the assistance of a grant from the Nuffield Foundation.

species in which it has been reported are unable to escape by leaping, as other Collembola might. Knowledge of this phenomenon is summarized by Paclt (1956) who also records other known predators of Collembola.

Most poduroids, except for the white subterranean forms, are rather uniformly colored and unpatterned, except for countershading. This is true of the common, widespread Jamaican forms: species of *Xenylla* and *Brachystomella,* and a large, flat *Pseudachorutes* which exhibits reflex bleeding. However, a number of forms have been found which are conspicuously marked with white. These include a *Hypogastrura,* blue with a white dorsum, and at least five species of *Pseudachorutes;* in the latter the white markings may be dorsal lines or patches, or rings around the body, and an extreme form is all white except for the blue anterior and posterior ends. (The colors may have been altered in alcohol, but the patterns have been seen in living specimens and probably do not change.)

These conspicuously marked forms have only been found in very damp localities. The great majority of the records is from localities in the mist forest in the Blue Mountains or John Crow Mountains, in habitats where the rainfall is very heavy and the atmosphere is constantly at or near the saturation point. Here several species have been seen on the surface of the ground or on vegetation in daylight. This is rather unusual for poduroids, which have a very thin cuticle and no scales or long setae, and die of desiccation at low humidities. In other parts of Jamaica they have not been seen on the surface, but remain in the soil or litter, where the humidity is high, except perhaps at night.

It is suggested that the contrasting patterns of these forms are examples of warning coloration, advertising the distasteful nature of the animals. The distribution of the forms appears to coincide with the zone of constant, high humidity, where it is possible for them to spend considerable time on the surface where they are visible. It is further suggested that these forms constitute a group of Müllerian mimics. The differences in pattern are probably not too important; the animals are very small, and all have the center of the body white dorsally, differ-

ing only in the extent of the white areas. Schmidt (1958) has shown that even a general resemblance in dominant pattern characteristics between two forms will cause a potential predator to react similarly to them.

It is unfortunate that no animals were actually seen to feed on Collembola in Jamaica. The fauna of the mist forest does, however, include a variety of potential predators, notably small frogs (*Eleutherodactylus*) and staphylinid beetles.

These hypotheses should be tested by observations and experiments which I am unable to carry out in my present location. Pseudachorutinae with conspicuous white or yellow markings have been described from other parts of the world, including the United States (*Pseudachorutes aureofasciatus*) and Africa, and someone who is more favorably situated may be able to pursue the matter.

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New Reared Neotropical Species of Rogas Nees (Hymenoptera: Braconidae)

By C. F. W. Muesebeck, U. S. National Museum, Washington, D. C.

The Neotropical species of *Rogas* are mostly undescribed. Recently I received specimens of a new species from Nicaragua that had been reared from *Laphygma frugiperda* and for which a name is needed. This species is described here, together with three other new forms that are represented in the National Museum collection by good series of reared specimens.

Rogas vaughani, new species

From the more common *R. laphygmae* Viereck, which parasitizes the earlier instars of the same host, this species differs strikingly in its black head, in its enormous eyes, with resultant short malar space and narrow face, and in having the radiellan cell widening apically.

Female. Length about 6 mm. Head strongly transverse; temple only about one-fourth as wide as eye; eyes much longer than greatest width of face; malar space about half as long as first segment of antennal flagellum; ocellocular line and postocellar line one-half the longest diameter of a lateral ocellus; face and clypeus very finely rugulose; frons, vertex and temples delicately shagreened; third and fourth segments of maxillary palpus conspicuously thickened; antennae normally 43- to 48-segmented.

Mesoscutum finely shagreened and subopaque; notauli very weak although complete and ending in a quadrate rugulose area behind the middle lobe; side of pronotum not sculptured in front of impression; mesopleuron smooth and polished except for a finely rugulose area just below tegula; propodeum finely rugulose and dull, the median longitudinal carina very weak and sometimes distinct only at extreme base. Second cubital cell of forewing not noticeably narrowing outwardly, and its height not greater than extreme width of radial cell; second abscissa of radius more than twice as long as the first, the third not dis-

tinctly more than twice the second; nervulus postfurcal by more than twice its length; mediella and lower abscissa of basella subequal; radiellan cell widening conspicuously toward apex of wing.

First and second tergites finely longitudinally rugulose and with a median longitudinal carina; the first tergite fully as wide at caudal margin as long; the second with a narrowly transverse, sharply margined and polished plate at base; the third weakly roughened basally; remainder of abdomen smooth. Ovipositor sheath slightly longer than second segment of hind tarsus.

Reddish yellow; head black; antennae black; palpi piceous; wings hyaline, the stigma and veins very dark; middle tarsus dusky; apex of hind tibia and the hind tarsus blackish; ovipositor sheath black.

Male. Essentially as in the female except that the abdomen is usually somewhat piceous apically.

Type. U. S. National Museum No. 65047.

Type-locality. Managua, NICARAGUA.

Described from twelve females and 5 males reared by Mario Vaughan R. in July, 1958, from nearly mature larvae of *Laphygma frugiperda* (J. E. Smith).

Rogas fortis, new species

This belongs to the same section of the genus as the preceding species, agreeing with that form in having a widening radiellan cell and a smooth and polished transverse plate at the base of the second tergite. It differs from *vaughani* especially in its much smaller eyes and wider face, in its slender maxillary palpi, in its completely sculptured mesopleuron and its largely yellow antennae.

Female. Length about 7.5 mm. Face broader than eye height and strongly transversely rugulose; transverse diameter of opening between clypeus and mandibles greater than distance from this opening to eye; temple about two-thirds as wide as eye; malar space longer than first segment of antennal flagellum; ocellocular line at least as long as longest diameter of an ocellus, postocellar line shorter; frons and vertex rather strongly rugu-

lose, temples more weakly so; antennae 58- to 63-segmented in the specimens examined.

Lobes of mesoscutum finely shagreened; notauli sharply impressed and foveolate, ending in a coarsely rugose area behind middle lobe; side of pronotum entirely rugose; mesopleuron and metapleuron rugulose punctate; propodeum rugose and with a median longitudinal carina that is sometimes weak or indistinct on posterior declivity. Inner calcarium of hind tibia as long as second tarsal segment. Second cubital cell not noticeably narrowing outwardly, its height at least as great as greatest width of radial cell; second abscissa of radius twice as long as first but decidedly less than half as long as third; nervulus postfurcal by a little more than its length; mediella conspicuously longer than lower abscissa of basella; radiellan cell widening toward apex of wing.

First and second tergites strongly longitudinally rugulose, the first as long as wide on caudal margin and with a complete median longitudinal carina; second tergite with the median carina strong at base but becoming weaker apically and usually incomplete; third tergite finely longitudinally aciculate on basal half, coriaceous beyond, and without a median carina. Ovipositor sheath about as long as second segment of hind tarsus.

Reddish brown; head black or blackish; antenna with scape and pedicel black, basal two-thirds of flagellum yellow and apical third piceous; thorax often varied with black and occasionally largely black; wings hyaline, stigma dark; legs entirely red or yellowish red.

Male. Like the female except that the thorax is usually mostly or entirely black and the abdomen is usually blackish beyond the third tergite; also the antennal flagellum is less extensively yellow.

Type.—U. S. National Museum No. 65048.

Type-locality. Montivideo, URUGUAY.

Described from thirteen females and six males reared by H. L. Parker at the type locality from the armyworm, *Pseudaletia unipuncta* (Haworth); and two females labeled as having been reared from an unidentified noctuid, also by Dr. Parker at Montivideo.

Rogas conformis, new species

In structure and sculpture this form seems to agree completely with *fortis,* described just above; but it differs strikingly in its black legs and black antennal flagellum.

Female. Length about 7.5 mm. Remarkably similar to *fortis* in structure and sculpture of head, thorax and abdomen and in details of wing venation; but the antennae are completely black, all femora and tibiae are black, and the hind tarsi are more or less infuscated.

Male. Essentially like the female.

Type. U. S. National Museum No. 65049.

Type-locality. "About 20 kilometers west of Montivideo, between Punta Yeguas and Punta Espanillo."

Described from six females and one male from the type locality, reared from *Farontia albilinea* (Hbn.) by H. L. Parker in 1944; and two females and one male reared by Dr. Parker from *Pseudaletia unipuncta* (Haw.) at Montivideo, Uruguay together with *R. fortis.*

Rogas gossypii, new species

This species is exceedingly similar to *laphygmae* Viereck and it is sometimes not easily distinguished. On the basis of specimens examined in this study, however, the two species can be separated by the number of antennal segments: *laphygmae* normally has 33- to 36-segmented antennae, whereas in *gossypii* the antennae are 38- to 41-segmented. Other differences, as in the size of the ocelli, in the relative length of the second cubital cell, and in the extent to which the nervulus is postfurcal, are good but they are subtle and difficult to use without material of both species for comparison.

Female. Length about 5 mm. Face not wider than eye height; temple strongly receding, less than half as wide as eye; malar space longer than first segment of antennal flagellum; diameter of opening between clypeus and mandibles shorter than distance from this opening to eye; face very finely shagreened; frons, vertex and temples coriaceous; ocellocular line not or

barely longer than longest diameter of an ocellus; postocellar line usually little more than half the diameter of an ocellus; antennae 39- to 41-segmented in the specimens examined.

Mesoscutum sculptured like face except for a rugose area behind middle lobe; notauli distinct anteriorly, not distinct posteriorly; side of pronotum rugose; mesopleuron and metapleuron finely, closely, granularly sculptured; propodeum finely rugulose and with a well developed median longitudinal carina. Anterior wing with second cubital cell longer than in *laphygmae,* the second abscissa of radius at least twice as long as first; nervulus more strongly postfurcal than in *laphygmae,* its distance from basal vein being one and one-half to two times its length; radiellan cell not broadening apically, poorly defined; mediella a little longer than lower abscissa of basella.

Abdomen with tergites 1, 2 and 3 longitudinally rugosostriate, each of them with a median longitudinal carina, that on the third fading out caudad; fourth tergite sculptured but much more weakly than the third; fifth and following smooth. Ovipositor sheath as long as second segment of hind tarsus.

Honey yellow; antennae above and the stemmaticum a little darkened; wings hyaline, the stigma yellow but sometimes with a dusky blotch at the middle.

Male. Essentially like the female. Antennae of the specimens examined 38- to 40-segmented.

Type. U. S. National Museum No. 65050.

Type-locality. Jaboticabal, Sao Paulo, BRAZIL.

Described from 2 females and 2 males from the type locality, reared by E. J. Hambleton, March, 1936, from *Alabama argillacea* (Hbn.); 4 females and 1 male reared by Mr. Hambleton from the same host at Vicosa, Minas Gerais, Brazil; 8 females and 15 males reared from *A. argillacea* at Maracay, Venezuela by F. Fernandez in August, 1945; 2 females reared from *A. argillacea* at Armero, Colombia in June, 1938, by V. Velasco L.; and many specimens of both sexes labeled as reared from *Anomis* sp. on cotton in the state of Pernambuco, Brazil, in January and February, 1883; also 5 from *Anomis* sp. on cotton at Chimbote, Peru, reared by H. D. Dusters in May, 1927.

Two Species of Odonata not Previously Recorded from Pennsylvania

By Rudolf A. Raff, Pittsburgh

During the 1959 collecting season, I had the good fortune of obtaining specimens of two species not previously reported from Pennsylvania. Mr. and Mrs. George H. Beatty of State College were kind enough to confirm my determinations and to provide me with the information that these species were indeed previously unreported in the state.

Enallagma basidens Calvert

On May 28, 1959, I took one male of this species in the tall grasses at the edge of a small pond near Pitcairn, Allegheny County. Subsequent search at the same pond failed to produce any further specimens until July 3, 1959, when a mated pair was taken in the sparse vegetation on the stony bank of a larger pond a few yards away. A third male (teneral) was found June 28, 1959, near a roadside ditch outside of Ligonier, Westmoreland County.

The Pitcairn locality consists of two ponds separated by an old railroad fill and surrounded by secondary scrub including maple, elm, and black locust. Apparently these ponds are maintained by rain only, since the stream which originally supplied them has been blocked off. In late May, *Ennalagma antennatum* Say, *Ischnura verticalis* Say, and *Ischnura posita* Hagen are extremely common in the weeds fringing these ponds.

Nasiaeschna pentacantha Rambur

A single male naiad (40 mm.) was collected by Mr. C. G. Vassilaros in French Creek, Mercer County in June, 1957. I am indebted to Mr. Vassilaros for his gift of this specimen to me.

Silvius atitlanensis sp. nov. and Notes on Other Species of Tabanidae (Diptera) from Guatemala, Especially from Tikal, El Petén

By Kirby L. Hays[1]

Introduction

The central American area encompassing Guatemala, Honduras, and the Yucatan is of considerable interest to the student of the Tabanidae because of the overlap of nearctic and neotropical faunas in that region. The area is tremendously varied ecologically and provides habitat niches for a variety of species. Furthermore, the tabanid fauna of this locale is represented largely from incidental collections, and little is known of the ecological requirements of the described species.

This paper is based upon specimens collected by Drs. T. H. Hubbell and I. J. Cantrall in four widely separated areas of Guatemala during the period of February through mid-May, 1956. The author is indebted to those gentlemen for the opportunity to study this material, all in the University of Michigan Museum of Zoology, and for the field notes relating to it. He also wishes to express his appreciation of the help furnished by Dr. C. B. Philip of the Rocky Mountain Laboratory, Hamilton, Montana, in identifying certain specimens.

The Environments and Associated Tabanidae

The four localities, Tikal, Poptún, Tiquisate, and Panajachel, are widely separated and in different environments. Tikal is in the heavy lowland forest area in north central Petén in the base of the Yucatan Peninsula; Poptún is 75 miles SSE of Tikal in the pine savannas; Tiquisate is the large United Fruit Company banana plantation on the Pacific coast in the Department of Escuintla; and Panajachel is on the north shore of Lake Atitlán in the highlands of the Department of Sololá.

[1] Contribution from the Department of Zoology-Entomology, Agricultural Experiment Station, Auburn University, and the Museum of Zoology, University of Michigan.

TIKAL: Tikal, probably the largest and most ancient of the Mayan cities of the Old Empire period, is located 27 miles northeast of Flores on Lake Petén in the Department of El Petén. An excellent account of both the biotic and physical environments in its vicinity is found in Stuart's (1958) paper. Geologically the area is situated on a gently rolling limestone plateau at an elevation of 715 feet. It is in the heart of an unbroken forest. The two principal plant associations are a high forest and a low forest. The ruins of the city of Tikal are located in the high forest. The trees rise to heights of 150 feet and undergrowth is sparse. There are occasional shallow pools of water called "aguadas," which disappear during the dry season, leaving the area without surface water. The low forest areas ("bajos") are located in extensive flats which are often flooded during the rainy season. In the bajos the tree growth reaches a height of about 50 feet, and the almost impenetrable undergrowth is composed of shrubs, vines, and palms of many species, many of them armed with vicious spines. Most of the collecting was done in the vicinity of the air strip clearing, the base camp, and along trails in the high forest in the vicinity of the ruins. The camp was located on the rim of an aguada (apparently banked and deepened by the Mayas), which was rather densely filled with shrubs, sedges, and herbage. This aguada became dry in May. The following species of Tabanidae were collected in this environment.

Chrysops scalarata Bell. 12♀ specimens collected between March 15 and April 12, 1956, in open high forest around ruins, in bushy margins of the air strip bordering a bajo, along sunny forest trails, and around edges of the aguada at camp. None taken at light.

Chrysops variegata (DeGeer). 2♀ taken February 20 and March 7, 1956, one in a *Panicum* area in the margin of the aguada at camp, the other along a sunny trail in the high forest near the ruins.

Esenbeckia illota Will. 6♀ taken between March 16 and April 6, 1956, mostly along the edge of dense brush bordering the camp clearing, between 6:40 and 7:40 P.M. Two specimens came to light.

Scione aurulans (Wied.). 16 ♀ taken between February 28 and March 13, 1956, in parts of the high forest area where there is much undergrowth, along trails, in the camp clearing, and around the ruins. This series shows considerable variation in the extent of the dark abdominal markings.

Lepiselaga crassipes (Babr.). 11 ♀ taken between February 20 and May 18, 1956, in areas of heavy, shrubby, undergrowth around the margin of the camp and airstrip clearings, around the aguada, and in the high forest near the ruins.

Chlorotabanus mexicanus (Linn.). 8 ♀ taken between March 1 and May 18, 1956, at light in camp on the embankment above the aguada.

Leucotabanus canithorax Fchld. 1 ♀ taken at camp March 10, 1956.

Diachlorus ferrugatus (Fabr.). 4 ♀ collected between March 2 and 29, 1956, in camp in vicinity of the aguada. Two taken at light.

Tabanus subruber (Bell.). 2 ♀ collected on May 12 and 19, 1956, in the camp clearing not far from the aguada. The specimen taken May 19 has the first posterior cell narrowly open, while that collected May 12 has a normally petiolate cell.

Tabanus lineola Fab. 5 ♀ collected between February 5 and March 24, 1956, in camp clearing near the aguada, in the bushy margins of the airstrip, and at light in camp.

POPTÚN: Poptún is a small village about 13 miles from the border of British Honduras in the Department of El Petén. It lies on a plain dotted with low conical limestone hills and occupied in part by a fairly extensive savanna, in part by an open grassy pine forest. There are few permanent streams, but scattered shallow depressions in the savanna contain water except during the dry months. Most of the collecting here was done in the open pine lands around the town, and in roadside ditches along the border between the pinelands and the broad-leaved tropical "high jungle" forests south of the village. The following species of Tabanidae were collected.

Chrysops variegata (DeGeer). 1 ♂ taken in pine savanna near a small stream on the outskirts of the village, April 14, 1956.

Chrysops latifasciata Bell. A single ♀ collected April 20, 1956 in a roadside ditch where the savanna gives place to the tall tropical hardwood forest.

Tabanus defilippi Bell. 2 ♀ collected April 16, 1956, in short-grazed weedy pasture bordered by open pinelands with scattered dry mud pans.

TIQUISATE: An extensive banana plantation operated by the United Fruit Company, located on the Pacific coastal plain in the hot lowlands of the southwestern part of the Department of Escuintla. Only a single species was collected here.

Tabanus carneus Bell. 1 ♂ at light near the headquarters May 9, 1956, at a point overlooking the sandy and gravelly banks and open forest bordering the Rio Siquicán.

PANAJACHEL: A small village on the north shore of the steep-walled, volcano-surrounded Lake Atitlán, in the highlands of the Department of Sololá. The town, built on the coarse sandy and gravelly outwash of the Rio Panajachel, is surrounded by many small irrigated groves of coffee ("cafetales") in which most of the collecting was done. The groves are rather open, well shaded by taller trees, and with an herbaceous ground cover most luxuriant in the vicinity of the irrigation ditches. Here two species of tabanids were taken, one of them new.

Tabanus pruinosus (Bigot). Three males were taken during night collecting in the cafetales between April 29 and May 11; all were attracted to the collector's headlight after being disturbed by the sweep-net.

Silvius atitlanensis sp. nov. Taken at Santa Marta, elevation 5,900–6,200 feet, on the slopes above Panajachel. Collected in dry pine woods on a projecting point of land with heavy, bushy undergrowth and a matted ground cover of bunch grass. Pasture lands and cultivated fields were located nearby.

Silvius atitlanensis sp. nov. (Figure 1)

A slender yellowish and brown species with maculate wings, accentuated spots dark brown; antennae robust, flagellum and scape of almost equal length; frontal callus shaped like an inverted ace of spades. Except for the antennae, the species appears similar to some species of *Assipala.*

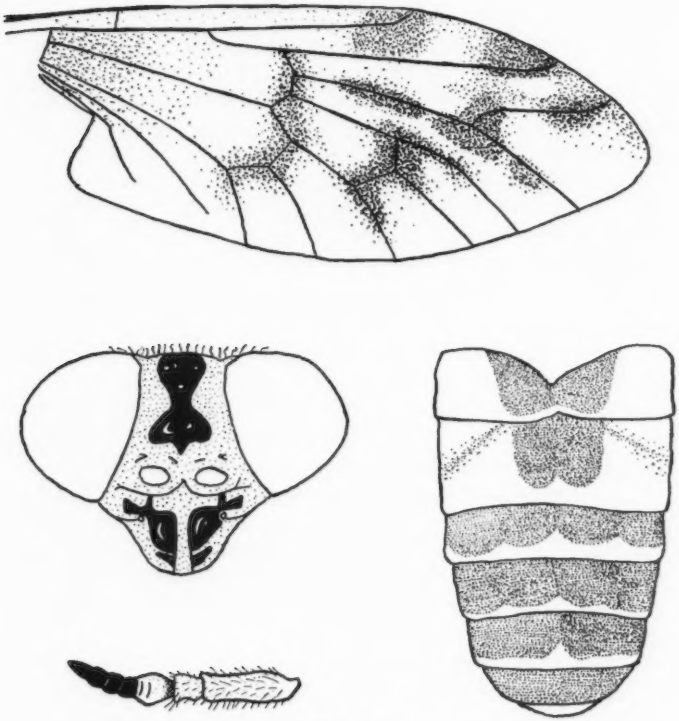

FIG. 1

1. Wing, holotype.
2. Cephalic aspect of head, holotype.
3. Antenna, holotype.
4. Dorsal aspect of abdomen, holotype.

Holotype female, length 9 mm. Eyes (relaxed) similar to *S. quadrivittatus*. Front about as high as basal width, divergent beneath; buff-yellow pollinose, denuded at the ocellar triangle, three prominent yellow ocelli; callosity large, shining brown, shield-shaped, similar to an inverted ace-of-spades (as in some *Assipala*), length and width equal, connected to ocellar triangle, widely separated from eyes. Face and cheeks buff-yellow pollinose, beard sparse and concolorous; two large, shining brown

calli around the apodemal pits, separated by a pollinose center line. Antennae robust and shaggy with coarse black hairs; length of scape and flagellum about equal; scape and pedicel yellowish-brown; flagellum orange brown, extreme base and annulets black; plates of each annulus with prominent pseudannulations. Palpi orange-brown, darkened laterally.

Dorsum of thorax yellowish-brown with four brown stripes and sparse yellow hairs. Scutellum dark brown. Pleurae brownish with faint gray pollen and mostly brownish hairs. Legs light brownish, apices of tibiae and tarsi darker; leg hairs color of leg. Wings as figured (fig. 1). Halters dark brown, lighter distally.

Dorsum of abdomen dark brownish and yellow. The first two tergites yellow with dark bilobed markings medianly. Segments 3, 4, and 5, dark brown, bordered behind with yellow, borders expanding mediad into a row of small yellow triangles, some yellow encroaching laterally. Tergite 6 dark brown, 7 yellow. Dorsum with sparse golden hairs. Venter light brown, darkened mediad, with sparse gray pollen laterally.

Holotype collected at Sololá, Santa Marta, above Panajachel, GUATEMALA on April 30, 1956, by T. H. Hubbell. The holotype is in the Museum of Zoology of the University of Michigan, Ann Arbor.

This species will not key in Pechuman (1938) or Philip (1954), but is easily recognizable because of the yellowish body coloration and maculate wings and the almost equal length of the scape and flagellum of the antennae. Philip (1958) believes this species to be an annectant offshoot from the *S. quadrivittatus* group of which the previous fartherest south representative is *S. gibsoni* from Monterrey, Mexico.

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An Undescribed Phytoseius from Florida and Mexico. (Acarina: Phytoseiidae)

By Donald De Leon, Erwin, Tennessee

In Entomological News 70: 149, I listed *Phytoseius plumifer* (C. & F.) as occurring in Florida and in Mexico. This listing is incorrect. Through the courtesy of Dr. D. A. Chant I have had the opportunity of examining specimens of *P. plumifer* taken from fig leaves shipped from Italy. The *Phytoseius* collected in Florida and Mexico and identified as *P. plumifer* is distinct from this species and is unnamed. It is described below. All measurements are in microns.

Phytoseius mexicanus, n. sp.

P. mexicanus is closely related to *P. plumifer* (C. & F.), but can be readily distinguished from that species by setae L1, L5–L7, M2, and D1–D5 being much shorter and by other characters.

Female: Dorsal shield 257 long, 122 wide (ten specimens), practically smooth, with sixteen pairs of setae of the following lengths: L1 38, L2 14, L3 42, L4 14, L5 60, L6 74, L7 47–72; M1 9, M2 42–57; D1 19, D2 12, D3 9, D4 9, D5 9, D6 7; S1 34–43, S2 17, VL1 44; L2, L4, M1, D1–D5, and S2 smooth, the others pectinate. Anterior ends of peritremata extending forward to about D1. Sternal shield with three pairs of setae; genital shield 55 wide near caudal margin; ventrianal shield strongly waist-shaped, 81 long, 38 wide near anterior margin, 45 wide at about level of anus, with three pairs of preanals (in one specimen two pairs), pores absent. Fixed digit with two teeth near terminal hook, movable digit with a tooth at about distal third and a minute tooth proximal of it; metatarsus IV with a macroseta 23 long; tarsus IV, excluding pretarsus, 94 long.

Male: Resembles female, but median and most dorsal setae longer (12–21) and L2 pectinate. Dorsal shield 200 long, 105 wide (three specimens). Spermatophore bearer L-shaped, the "heel" with a pair of ear-like lobes, shaft 14 long, foot 8 long.

Holotype: Female, Tuxtla Gutierrez, Chiapas, January 15, 1957 (D. De Leon), from *Cecropia peltata. Paratypes:* one male, three females, same data as for holotype; four females, one male, Key Largo, Florida, U. S. A., June 7, 1956 (F. W. Mead and D. De Leon), from *Callicarpa americana.* Additional specimens were collected from *Guettarda scabra,* Key Largo, Fla., June 7, 1956 and in Mexico from *Cordia boissieri* and *Melochia tomentosa* at Reynosa, Tam., from *Eriobotrya japonica* at Tamazunchale, S.L.P., and from *Guazuma tomentosa* at Veracruz, Ver., all in December 1956. Paratypes will be deposited in the University of Florida collections, Gainesville; the type is in the author's collection.

An Unusual Instance of Phoresy in Acarina

By D. A. CHANT, Entomology Research Institute for Biological Control, Research Branch, Canada Department of Agriculture, Belleville, Ontario

A culture of the cabbage maggot, *Hylemya brassicae* (Bouché) is maintained during the winter on turnips at the Entomology Research Institute for Biological Control. In December, 1959, nearly all the adult flies were infested with large numbers of a mesostigmatid mite subsequently identified as *Macrocheles merdarius* (Berlese). This species is common in dung in various European countries but was not previously recorded from North America.

The adult females of *M. merdarius* congregated on the puparia in the maggot cultures and attached themselves to the young flies as they emerged. Immature *M. merdarius* and males were free-living in the vermiculite substrate of the culture. As many as 60 adult mites were seen on one fly. Though they apparently did not feed on the host, by sheer weight of numbers the flies were prevented from normally developing and eventually became distorted and died. This can be considered a truly phoretic relationship, though death resulted for one partner, because the mites were not on the flies primarily to feed.

Macrochelids are well known to attach themselves to insects for transportation (Hughes, 1959) and one species is known to prey upon dipterous eggs in cultures (Baker & Wharton, 1951).

A second, unusual phoretic relationship was found in the maggot cultures. On the dorsal shield of many *M. merdarius* that were infesting the adult flies there were from one to four acarid hypopi. They were identified as of the genus *Histiostoma* of the family Anoetidae, but as adults were not found in the culture their specific identity cannot be determined.

The hypopus is a non-feeding stage adapted to clinging to other animals that occurs in the development of several families of mites. Its function is one of distribution (Hughes, *loc. cit.*). Hypopi are sometimes referred to as "wandernymphs" and have been collected on many insects and other arthropods. They are rarely found on other mites, but when they are it is usually considered accidental. In the present instance the relationship seemed to be real; the hypopi were never found attached to the flies themselves but only to *M. merdarius*.

Hughes surveyed much of the literature on phoresy by mites, and on the hypopial stages of many species. He mentioned several instances of mites being phoretic on other mites but these were mostly of female scutacarids and nymphal uropodids on various Mesostigmata.

All stages of *Caloglyphus mycophagus* Mégn. (Acarina: Acaridae) were common in the culture but apparently did not enter into phoretic relationships with any of the other animals present.

I am grateful to Dr. H. E. Welch of the above Institute for drawing my attention to this unusual relationship, to Dr. E. W. Baker, United States National Museum, Washington, D. C., for identifying the anoetid, and to Dr. H. H. J. Nesbitt, Carleton University, Ottawa, for identifying *C. mycophagus*.

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EXCHANGES

This column is intended only for wants and exchanges, not for advertisements of goods for sale or services rendered. Notices not exceeding three lines free to subscribers.

These notices are continued as long as our limited space will allow; the new ones are added at the end of the column, and, only when necessary those at the top (being longest in) are discontinued.

Butterflies. Wish to exchange specimens for Japanese species. Please write to Ichiro Nakamura (Boy, age 16), 26 Aza-Nichiyama Obayashi Takarazuka-shi, Hyogo-Ken, Japan.

Phasmidae of nearctic area desired alive. Purchase or trade, drawing on large stock of major orders, worldwide. Domminck J. Pirone, Dept. Entomology, Cornell University, Ithaca, N. Y.

Nitidulidae and Rhizophagidae wanted in exchange for European beetles of all families. O. Marek, Zămberk 797, Czechoslovakia.

Wanted and Needed. We are compiling a history of entomology, and particularly, at present, of the amateur insect clubs that flourished 50 to 75 years ago. Will you who have knowledge of such early clubs or societies advise me, giving facts on the time of existence, members, etc., which you may have. J. J. Davis, Dept. of Entomology, Purdue University, Lafayette, Indiana.

Cockroaches (Blattoidea) of Japan, Okinawa, Formosa (Taiwan), and the Philippines are being studied in cooperation with Dr. K. Princis. Loans of specimens from that area are desired. A. B. Gurney, U. S. National Museum, Washington 25, D. C.

Orthoptera. Gryllinae (except domestic sp.) and **Pyrgomorphinae** of the world wanted in any quantity for work in morphology, taxonomy, cytology, and experimental biology; dry, or in fluid, or living. Write D. K. Kevan and R. S. Bigelow, Dept. of Entomology, McGill University, Macdonald College, Quebec, Canada.

INDEX TO VOLUME LXXI

(* Indicates new genera, names, etc.)

ALEXANDER, C. P. New exotic crane-flies (Tipulidae: Diptera) Part I 15
Part II 237

BELLINGER, P. F. Possible adaptive coloration in poduroid Collembola 254

BRESCIA, V. T. (See under Slifer, E. H.)

BROWN, W. L., JR. A new African ant of the genus Strumigenys, Tribe Dacetini 206

BURKS, B. D. The establishment of Brachymeria intermedia (Nees) in North America (Hymenoptera, Chalcicidae) 62

CHANT, D. A. An unusual case of phoresy in Acarina ... 270
(See also under Jorgensen, C. D.)

CLENCH, H. K. (See under Ehrlich, P. R.)

COOK, D. R. Two new species of Nautarachna from western North America (Acarina: Nautarachnidae) 227

COOK, E. F. The male of Chaoborus (Sayomyia) annulatus Cook 25, 79

CRABILL, R. E. Concerning the aberrant genus Nothobius, with a redescription of its type species (Chilopoda: Geophilomorpha: Hymantariidae) 87
A remarkable form of sexual dimorphism in a centipede (Chilopoda: Lithobiomorpha: Lithobiidae) 156

DARSIE, R. F., JR. (See under Florschutz, O.)

DELEON, D. An undescribed Phytoseius from Florida and Mexico (Acarina: Phytoseiidae) 269

DENNIS, C. J. A new record of Cyrtolobus auroreus Woodruff from Wisconsin (Homoptera) 27

DREISBACH, R. R. Two additional new species in the genus Haploneurion (Hymenoptera: Psammocharidae) from Chile with a key to the known species 117

EHRLICH, P. R. and H. K. CLENCH. A new subgenus and species of Callophrys (s.l.) from the southeastern United States (Lepidoptera: Lycaenidae) 137

EMERSON, K. C. A new species of Mallophaga from the barred owl 169

EVANS, H. E. Further studies on the subgenus Xenopompilus, including a first record of this group from the United States (Hymenoptera: Pompilidae) 165

FERGUSON, M. B. (See under Riegel, G. T.)

FLORSCHUTZ, O., JR. and R. F. DARSIE, JR. Additional records of ectoparasites on Delaware mammals 45

FOOTE, R. H. A new tephritid genus, Rhagoletoides, with notes on its distribution and systematic position (Diptera: Tephritidae) 145

FREMLING, C. R. Subimaginal molt of Caenis hilaris (Say) (Ephemeroptera: Caenidae) 14

FROESCHNER, R. C. Review of the genus Katakadia Distant (Hemiptera: Cydnidae) 249

GANGWERE, S. K. The feeding and culturing of Orthoptera in the laboratory 7, 37
The use of the mouthparts of Orthoptera during feeding 193

HAYS, K. L. Silvius atitlanensis sp. nov. and notes on other species of Tabanidae (Diptera) from Guatemala, especially from Tikal, El Peten 263

HUBBARD, C. A. Fleas from Iraq 21
A packet of fleas from Alaska 245

JORGENSEN, C. D. and D. A. CHANT. A new species of Typhlodromus (Acarina: Phytoseiidae) from Oregon 161

JUDD, W. W. Laelius utilis Cockerell (Hymenoptera: Bethylidae) stinging a child at London, Ontario 104

KEMPF, W. W. Tranopeltoides Wheeler, a synonym of Crematogaster Lund (Hymenoptera: Formicidae) 173

KNULL, J. N. A new subspecies of Cacoplia nebulosa (Hald.) (Coleoptera: Cerambycidae) 116

KNULL, J. N., and D. J. KNULL. Observation on the behavior of some male Gypononi. (Homoptera: Cicadellidae) 78
KORMONDY, E. J. New North American records of anisopterous Odonata 121
KROMBEIN, K. V. Biological notes on some Hymenoptera that nest in sumach pith 29, 63
LANSBURY, I. Note on Corixidae occurring at black light traps (Hemiptera: Heteroptera) 244
LARIVERS, I. Heleocoris faradjensis, a new species from the Belgian Congo (Hemiptera: Naucoridae) 99
MACLEOD, E. G. Sexual differences in the proportions of two-winged and four-winged individuals of Psectra diptera (Burmeister), together with five new records (Neuroptera: Hermerobiidae) 231
MCCOMB, C. W. Two new species of Aphaereta, with a key to the nearctic species (Hymenoptera: Braconidae) 175
MCDERMOTT, F. A. A note on the genus Lucernuta Castelnau and a new species (Coleoptera: Lampyridae) ... 81
LANHAM, U. N. A neglected diagnostic character of the Apoidea (Hymenoptera) 85
MUESEBECK, C. F. W. New reared Neotropical species of Rogas Nees (Hymenoptera: Braconidae) 257
PAPP, C. S. Distributional records on some North American beetles with remarks on their ecology in southern California (Notes on North American Coleoptera, No. 9) 69
RAFF, R. A. Two species of Odonata not previously recorded from Pennsylvania 262
RAPP, W. F., JR. The genus Dermacentor (Ixodides) in Nebraska 217
REINHARD, H. J. Change of generic name in Tachinidae (Diptera) 103

RIEGEL, G. T. and M. B. FERGUSON. New State records of Zoraptera 213
ROBINSON, M. Notes on a few Mexican Scarabaeidae (Coleoptera) 105
SCHMIEDER, R. G. Lady bugs 107
SCOTT, H. G. The Collembola of New Mexico. I. Podurinae and Hypogastrurinae 53
II. Neanurinae 183
SLIFER, E. H. A rapid and sensitive method for identifying permeable areas in the body wall of insects 179
SLIFER, E. H. and V. T. BRESCIA. Permeable sense organs on the antennae of the yellow fever mosquito, Aedes aegypti (Linnaeus) 221
SNETSINGER, R. Some predators of the clover mite 149
STALLINGS, D. B. and TURNER, J. R. A new species of Agathymus and a new subspecies of Megathymus (Lepidoptera, Rhopalocera, Megathymidae) 109
SVIHLA, A. Emergence and transformation of Tanypteryx hageni Selys (Odonata) 131
TURNER, J. R. (See under Stallings, D. B.)
WEBER, N. A. The behavior of the queen as compared with the worker in the fungus-growing ants (Hym.: Formicidae) 1
WHEELER, M. R. A new genus and two new species of neotropical flies (Diptera: Drosophilidae) 207
WELLS, A. B. Pest control, A. D. 1120 107
WOODRUFF, R. E. Some robber-fly records (Diptera: Asilidae) 142

GENERAL SUBJECTS

Adaptive coloration in Collembola 254
American Entomological Society, list of Corresponding Members of 226
Behavior of male Gyponini (Homop.) 78
Behavior of queen fungus-ants 1
Chemoreceptors, staining method for 179, 221
Clover mite, predators of 149
Corixidae at black light traps 244
Culturing Orthoptera 7, 37
Diptera commensal on crabs 207
Emergence of dragonfly Tanypteryx 131
Hymenoptera in sumach pith, biological notes 29, 63
Nomenclature notices 6, 36, 144, 226
Lady bugs, origin of name ... 107
Mouthparts, use in feeding .. 193
Pacific Science Congress, Tenth 106
Permeable areas, staining method for 182, 221
Pest Control, A. D. 1120 107
Phoresy, Acarina on Lepidoptera 270
Psectra diptera, sexual differences in proportions of two-winged forms 231
Sexual dimorphism in centipede 156
Sensilla, staining method for identifying permeable .. 182, 221
Subimaginal molt in Caenis .. 14

OBITUARIES

Thienemann, A. 191

GEOGRAPHICAL DISTRIBUTION

Africa: Hym. 206
Alabama: Col. 116
Argentina: Dipt. 18
Arizona: Lep. 109
Brazil: Hym. 261
California: Acar. 228; Col. .. 69
Chile: Dipt. 19, 20; Hym. ... 117
Congo: Hemip. 99
Florida: Acar. 269
Georgia: Hym. 177
Guatemala: Dipt. 263
India: Dipt. ..... 239–243.
Mexico: Acar. 269
New Mexico: Collembola 53, 183; Lep. 140
Nicaraugua: Hym. 258
Ohio: Dipt. 142
Ontario: Hym. 178
Oregon: Acar. 161
Paraguay: Col. 82
Pennyslvania: Odon. 262
Peru: Dipt. 16
Puerto Rico: Dipt. 207
Texas: Malloph. 169
Uruguay: Hym. 259, 260
Utah: Lep. 112
Wyoming: Acar. 230

COLEOPTERA

audax, Tachyura 71
brunneomarginatus, Platynus .. 71
Coccinellidae 107
cumatilis, Chlaenius 72
elegans, Calospasta 75
erosa, Tegrodera 73
illigeri, Cladodes 82
insitiva, Anomala 105
kincaidi, Nebria 70
Lady bugs 107
lineola, Agonoderus 72
Lucernuta, notes on 82

metallica, Nebria 70
nebulosa albata, Cacoplia* ... 116
Nemognatha, distrib. of 15 species in Cal. 76
paraguayensis, Lucernuta* .. 82
perpulchra var. *bioculata,* Calospasta* 76
perpulchra var. *mackenziei,* Calospasta* 76
nitidicollis, Lytta 74
perpulchra, Calospasta 75
Predacious on clover mite ... 155
Pyrocoelia 82
savignii, Lucernuta 83
selanderi, Bothynus 106
sericeus, Chlaenius 72
texana, Helluomorpha 71
Texanus, Ateuchus 105

DIPTERA

aegypti, Aedes, chemoreceptors 221
Agathomyia 103
annulatus, Chaoborus, male of 25, 79
*Anzamyia,** n. name 103
argentifera, Mayagueza** 212
Asilidae from Ohio 142
atitlanensis, Silvius* ... 266, 267
carcinophila, Drosophila* 208
coorgensis, Lechria* 237
Cordilura, braconid from 178
glomerosa, Hexatoma* 230
mannheimsi, Australimnophila* 15
*latifrons, Rhagoletoides,** n. comb., distribution of 145
macerinus, Heteropogon 143
missouriensis, Diogmites 142
nilgiricus, Protohelius* 238
pastoris, Molophilus* 18
Predacious on clover mite ... 155
*Rhagoletoides** 145
Sarcophaga, braconid from .. 177
schachovskoyana, Gynoplistia* 17
stenorhabda, Molophilus* 20
Tabanidae from four environments and localities in Guatemala 263
terebrella, Hexatoma* 241
terebrina, Hexatoma* 242

HEMIPTERA

caliginosus, Katakadia 251
Corixidae at black light traps 244
faradjensis, Heleocoris* 99
Heleocoris, rev. 99
Katakadia, review 249
Predacious on clover mite ... 154

HOMOPTERA

auroreus, Cyrtolobus 27
Behavior of male Gyponini .. 78
dracontea, Dragonana, behavior 78
rhois, Rhopalosiphum 31
suilla, Marganana, behavior 78
verticallis, Gypona, behavior 78

HYMENOPTERA

annulatus, Passaloecus 35
Aphaereta, key to nearctic species 176
Apoidea, diagnostic character of 85
Behavior of queen fungus-ant 1
bernardi, Strumigenys* 206
boliviana, Crematogaster n. comb. 174
calcarata, Ceratina 68
canadensis, Cubocephalus 32
canadensis, Perilampus 32
coeruleata, Epistenia 32
conformis, Rogas* 260
Crematogaster, synonymy ... 173
dubitatus, Hemitaxonus 30
enhuycki, Chrysis 33
excavata, Aphaereta* 176
fortis, Rogas* 258

*gossypii,** *Rogas* 260
Haploneurion, key to species 119
harbecki, Pemphredon 34
huberi, Crematogaster, n. comb 173
Hymenoptera in sumach pith 29, 63
intermedia, Brachymeria 62
latro, Habritys 32
lethifer, Pemphredon 34
*masoni,** *Aphaereta* 177
mediator pleuralis, Perithous 31
metallica, Ceratina 68
*niger,** *Haploneurion* 117
perennis, Stenodynerus 33
peruviana, Crematogaster, n. comb 175
*reedi,** *Haploneurion* 118
sinuosus, Omalus 32
stirpicola, Ectemnius, biology of 63
stolli, Crematogaster n. comb 174
tarascanus, Pompilus 167
tlahuicanus, Pompilus 166
Tranopeltoides, synonmy 173
urichi panamensis, Trachymyrmex, behavior 1
utilis, Laelius 104
*vaughani,** *Rogas* 257
Xenopompilus, studies on subspecies 165
zabriskei, Axima 32
zabriskei, Diomorus 32
zendaloides, Leptochilus 33

LEPIDOPTERA

argillacea, A. 261
brassicae, Hylemya, phoresy of mite 270
*freemani,** *Agathymus* 109
frugiperda, Laphygma 257
*mcfarlandi,** *Callophrys* (Sandia)* 138
Predacious on clover mite ... 155
unipuncta, Psedaletia 259
*yuccae browni,** *Megathymus* 112

ODONATA

Anisoptera, North American records 121
basidens, Enallagma 262
hageni, Tanypteryx, description of emergence 131
pentacantha, Nasiaeschna 262

ORTHOPTERA

differentialis, Melanoplus, chemoreceptors and permeable areas in 179
Feeding and culturing of ... 7, 37
microptera, Romalea, mouthparts of 199
Mouthparts, use in feeding .. 193
oblongifolia, Amblycorypha, mouthparts of 201
rotundifolia, Amblycorypha, mouthparts of 201

SMALLER ORDERS

acanthops, Hoplopleura (Anoplura) 48
alaskensis, Polyplax (Anopl.) 49
*albamaculata,** *Hypogastrura* (Collembola) 55
*alpinus,** *Xenyllodes* (Collembola) 184
Anoplura from Delaware mammals 45
arctomys, Oropsylla (Siphon.) 51
asio, Megabothris (Siphon.) 50
Collenbola, adaptive coloration in 254
Collembola of New Mexico 53, 183
Corrodentia predacious on clover mite 154
Dermaptera, mouthparts in feeding 193
diptera, Psectra (Neurop.) sex differences in proportion of two-winged forms 231

hilaris, Caenis (Ephem.), subimaginal molt 14
*hoffi,** *Xenyllodes* (Collembola) 185
hubbardi, Zorotypus (Zoraptera) 213
Kurodaia (*Conciella*) (Malloph.), key to species on owls 170
Kurodaia (Malloph.), list of type hosts of 172
*magna,** *Kurodaia* (Malloph.) 169
minutissima, Hypogastrura, n. comb. (Collembola) 57
multispinosus, Odontopsyllus (Siphon.) 50
*Neanurodes** (Collembola) ... 190
*neomexicanus,** *Neanurodes** (Collembola) 190
*neomexicana,** *Xenylla* (Collembola) 60
Neuroptera predacious on clover mite 154
*pallescens,** *Xenyllodes* (Collembola) 186
*punctata,** *Hypogastrura* new comb. (Collembola) 58
simplex, Cediopsylla (Siphon.) 50
Siphonaptera from Alaska ... 245
Siphonaptera from Delaware mammals 45
Siphonaptera from Iraq 22
Thysanoptera predacious on clover mite 154
*violacea,** *Anurida* (Collembola) 186
Zoraptera, new records 213

NON-HEXAPODA

ACARINA

Acarina from Delaware mammals 45
Acari predacious on *Bryobia* 153
affinis, Radfordia 48
alaskensis, Laelaps 47
andersoni, Dermacentor 218
*californica,** *Nautarachna* ... 227
*crataegi,** *Typhlodromus* 161
Dermacentor, in Nebraska ... 217
glasgowi, Haemolaelaps 46
kochi, Laelaps 48
Listrophorus sp. 47
*mexicanus,** *Phytoseius* 269
merdarius, Macrocheles, phoresy of 270
mycophagus, Caloglyphus 271
*pioniformis,** *Nautarachna* ... 228
praetiosa, Bryobia, predators of 149
variabilis, Dermacentor 217

ARANEAE

Predators on clover mite ... 153

CHILOPODA

*californicus,** *Nothobius* 89
Gosothrix 87
Nothobius, diagnosis of 97
zinus, Paitobius, sexual dimorphism in 157

CRUSTACEA

Coenobita, Drosophila commensal on 207

PSEUDOSCORPIONIDA

Chernetid predacious on clover mite 153

NON-ARTHROPODA

Barred owl (*Strix varia*), Mallophaga from 169
Mammals, ectoparasites from 45, 217

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